

IN THE CLAIMS:

1. (Currently amended) A method for handling wafers, the method comprising:

extending a first arm from a first position for retrieving a first wafer from a storage position
~~using a first arm,~~

returning the first arm to the first position,

transferring the first wafer from the first arm to a second arm at the first position,

rotating the second arm about an axis for delivering the first wafer to a processing position
for processing ~~using the second arm~~ to generate a processed wafer,

rotating the first arm about the axis for removing the processed wafer from the processing
~~position using the first arm,~~

rotating the first arm about the axis to return the first arm to the first position, and,

extending the first arm from the first position for returning the processed wafer to the storage
~~position using the first arm.~~

2. (Currently amended) A method according to claim 1, where delivering includes delivering while
extending the first arm from the first position for retrieving a next wafer from the storage position
~~using the first arm.~~

3. (Original) A method according to claim 1, further including orienting the first wafer prior to
transferring the first wafer.

4. (Original) A method according to claim 1, further including processing the first wafer in a
process chamber.

5. (Original) A method according to claim 4, where processing includes performing at least one of:
photoresist, dry etch, ion implantation, chemical deposition, and diffusion.

6. (Original) A method according to claim 5, where processing includes at least one of orienting the next wafer and transferring the next wafer from the first arm to the second arm.
7. (Original) A method according to claim 1, where the storage position is in a wafer cassette and retrieving includes indexing the cassette.
8. (Currently amended) A method according to claim 1, where the storage position is in a wafer cassette and returning the processed wafer to the cassette ~~using the first arm~~ includes indexing the cassette.
9. (Original) A method according to claim 2, where the storage position is in a wafer cassette and retrieving includes indexing the cassette.
10. (Currently amended) A method according to claim 1, where returning the processed wafer to the storage position includes retrieving a ~~delivering the next wafer for processing using the second arm.~~
11. (Currently amended) A method according to claim 10-1, where returning the processed wafer to the storage position ~~using the first arm~~ includes rotating ~~placing the second arm to in~~ a standby position.
12. (Original) A method according to claim 1, where transferring includes aligning the first arm and the second arm to facilitate the transfer of the first wafer from the first arm to the second arm.
13. (Currently amended) A method according to claim 1, where transferring includes:
controlling an orienter to lift ~~transfer~~ the first wafer from the first arm,
rotating the second arm from a standby position to the first position, and,
controlling the orienter to lower the first wafer onto the second arm.
14. (Currently amended) A method for handling wafers, the method comprising:

retrieving a first wafer from a wafer cassette using a first arm,
lifting the first wafer from the first arm,
rotating a second arm about an axis from a standby position to a position aligned with the
first arm,
lowering the first wafer onto the second arm for transferring the first wafer from the first
arm to the a-second arm,
delivering the first wafer for processing by rotating using the second arm about the axis to a
processing position while retrieving a distinct next wafer from the wafer cassette using the first arm,
processing the first wafer to generate a processed wafer, while transferring the next wafer
from the first arm to the second arm,
removing the processed wafer from processing by rotating using the first arm about the axis
to the processing position, and,
delivering the next wafer for processing using the second arm while returning the processed
wafer to the cassette using the first arm.

15. (Original) A method according to claim 14, further including retrieving a distinct next wafer
from the cassette using the first arm while processing the next wafer, and iteratively performing the
processing, removing, and delivering.

16. (Original) A method according to claim 14, where processing includes performing at least one
of: photoresist, dry etch, ion implantation, chemical deposition, and diffusion.

17. (Currently amended) A method according to claim 14, where transferring includes controlling
an orienter to orient transfer the first wafer for processing between lifting the first wafer from the
first arm and lowering the first water onto the second arm.

18. (Original) A method according to claim 14, where retrieving includes indexing the cassette.

19.-22. Canceled

23.-50. Canceled

51. (Withdrawn) A system for handling wafers, the system comprising:

- a first arm for handling wafers,
- a distinct second arm for handling wafers,
- a first cassette of wafers, and,
- a wafer processing system,

where wafers are delivered to the processing system from the first cassette using the first arm and the second arm, and where the delivery includes,

- individually retrieving a first wafer from the cassette using the first arm,
- transferring the first wafer from the first arm to the second arm,
- delivering the first wafer for processing by the wafer processing system using the second arm,
- processing the first wafer to generate a processed wafer, while retrieving a next wafer from the cassette using the first arm,
- transferring the next wafer to the second arm,
- removing the processed wafer using the first arm and delivering the next wafer for processing using the second arm,
- processing the next wafer to generate a processed wafer while returning the processed wafer to the cassette, and
- iteratively performing the processing, transferring, removing, and processing to process the wafers in the cassette.

52. (Withdrawn) A system according to claim 51, further including a first load lock for the first cassette.

53. (Withdrawn) A system according to claim 51, further including an orienter for orienting the wafers before processing and transferring the wafers between the first arm and the second arm.

54. (Withdrawn) A system according to claim 51, further including a platen for retrieving wafers from the second arm for delivering the wafers, and transferring processed wafers to the first arm for removing the processed wafers.

55. (Withdrawn) A system for handling wafers, the system comprising:

- a first arm for handling wafers,
- a distinct second arm for handling wafers,
- a first cassette of wafers, and,
- a wafer processing system,

where wafers are delivered to the processing system from the first cassette using the first arm and the second arm, and where the delivery includes,

- individually retrieving a first wafer from the cassette using the first arm,
- delivering the first wafer for processing by the wafer processing system using the first arm,

- returning a processed wafer to the cassette using a second arm while processing the first wafer to generate a processed wafer,

- retrieving a next wafer from the cassette using the second arm,
- removing the processed wafer using the first arm and delivering the next wafer for processing using the second arm,

- processing the next wafer to generate a processed wafer while returning the processed wafer to the cassette, and

- iteratively performing the retrieving, delivering, returning, retrieving, removing, and processing to process the wafers in the cassette.

56. (Withdrawn) A system according to claim 55, further including a first load lock for the first cassette.

57. (Withdrawn) A system according to claim 55, further including an orienter for orienting the wafers before processing.

58. (Withdrawn) A system according to claim 55, further including a platen for retrieving wafers from the first and second arms for processing the wafers, and transferring processed wafers to the first and second arms for removing the processed wafers.

59. (Withdrawn) A system according to claim 55, further including at least one carriage for moving the first and second arms relative to the cassette for returning and retrieving wafers from the cassette.

60. (Currently amended) A method for handling wafers, the method comprising:

retrieving a next wafer from a selected cassette using a first arm,
transferring the next wafer to a second arm at a transfer position,
rotating the first and second arms about an axis from the transfer position to a processing position,
removing a processed wafer from a process system at the processing position using the first arm,
delivering the next wafer to the process system using the second arm, and,
returning the processed wafer to the selected cassette using the first arm.

61. (Currently amended) A method according to claim 60, further including iteratively returning to retrieving, wherein:

returning comprises rotating the first arm about the axis to the transfer position and rotating the second arm about the axis to a standby position, and,

transferring comprises rotating the second arm to the transfer position.

62. (Previously presented) A method according to claim 60, where transferring includes using an orienter to transfer the next wafer.

63. (Previously presented) A method according to claim 60, further including orienting the processed wafer before returning.

64. (Previously presented) A method according to claim 60, further including selecting a cassette prior to retrieving.

65. (Previously presented) A method according to claim 60, further including determining whether unprocessed wafers remain in the selected cassette.

66. (Previously presented) A method according to claim 65, including, when no unprocessed wafers remain in the selected cassette, performing at least one of: load lock processing associated with the selected cassette, and selecting a next cassette and iteratively returning to retrieving.

67. (Currently amended) A method for handling wafers, the method comprising:
retrieving a next wafer from a storage position using a first arm,
removing a processed wafer from processing using a second arm,
delivering the next wafer for processing using the first arm,
returning the processed wafer to the storage position using the second arm, and
iteratively performing the retrieving, removing, delivering and returning while alternating using the first arm and the second arm between iterations.

68. (Previously presented) A method according to claim 67, where returning includes returning while processing the next wafer in a process chamber.

69. (Previously presented) A method according to claim 68, where processing includes performing at least one of: photoresist, dry etch, ion implantation, chemical deposition, and diffusion.

70. (Previously presented) A method according to claim 67, further including orienting the next wafer prior to delivering the next wafer.

71. (Previously presented) A method according to claim 67, where the storage position is in a wafer cassette and retrieving includes indexing the cassette.

72. (Previously presented) A method according to claim 67, where the storage position is in a wafer cassette and returning the processed wafer to the cassette includes indexing the cassette.

73. (Previously presented) A method according to claim 67, where returning the processed wafer to the storage position using the second arm includes placing the first arm in a standby position.

74. (Previously presented) A method for handling wafers, the method comprising:

retrieving a first wafer from a wafer cassette using a first arm while removing a processed wafer from processing using a second arm,

delivering the first wafer for processing,

returning the processed wafer to the wafer cassette while processing the first wafer to generate a processed wafer,

retrieving a next wafer from the wafer cassette using the second arm while removing the processed wafer from processing using the first arm,

delivering the next wafer for processing,

returning the processed wafer to the wafer cassette while processing the next wafer to generate a next processed wafer, and

iteratively performing the retrieving, delivering and returning while alternating using the first arm and the second arm between iterations.

75. (Previously presented) A method according to claim 74, further including orienting the first wafer prior to delivering the first wafer, and orienting the next wafer prior to delivering the next wafer.

76. (Previously presented) A method according to claim 74, wherein retrieving includes indexing the cassette.

77. (Previously presented) A method according to claim 74, where delivering the first wafer includes processing the first wafer in a process chamber, and delivering the next wafer includes processing the next wafer in a process chamber.

78. (Previously presented) A method according to claim 77, where processing includes performing at least one of: photoresist, dry etch, ion implantation, chemical deposition, and diffusion.